

PATENT COOPERATION TREATY

Canter

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

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RECEIVED
13 MAR 2006

PCT

**WRITTEN OPINION OF THE
INTERNATIONAL PRELIMINARY
EXAMINING AUTHORITY**
(PCT Rule 66)

Date of mailing (day/month/year)	10.03.2006
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Applicant's or agent's file reference
P-26-485-PCT

REPLY DUE **within 1 month(s)**
from the above date of mailing

International application No.
PCT/EP2005/050484

International filing date (day/month/year)
04.02.2005

Priority date (day/month/year)
13.02.2004

International Patent Classification (IPC) or both national classification and IPC
H03L7/10, H03L7/099, H03L7/095

Applicant
ECOLE POLYTECHNIQUE FEDERALE DE LAUSANNE (EPFL)

1. ☒ The written opinion established by the International Searching Authority:
 ☒ is ☐ is not
 considered to be a written opinion of the International Preliminary Examining Authority
2. This second report contains indications relating to the following items:
 - ☒ Box No. I Basis of the opinion
 - ☐ Box No. II Priority
 - ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - ☐ Box No. IV Lack of unity of invention
 - ☒ Box No. V Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - ☐ Box No. VI Certain documents cited
 - ☒ Box No. VII Certain defects in the international application
 - ☒ Box No. VIII Certain observations on the international application

3. The applicant is hereby **invited to reply** to this opinion.

When? See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(e).

How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

Also: For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4bis. For an informal communication with the examiner, see Rule 66.6. For an additional opportunity to submit amendments, see Rule 66.4.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.

4. The final date by which the international preliminary report on patentability (Chapter II of the PCT) must be established according to Rule 69.2 is: 13.06.2006

Name and mailing address of the international preliminary examining authority:



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**WRITTEN OPINION OF THE INTERNATIONAL
PRELIMINARY EXAMINING AUTHORITY**

International application No.
PCT/EP2005/050484

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This opinion is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements** of the international application, this opinion is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed")*:

Description, Pages

1-13 as originally filed

Claims, Numbers

5-18 as originally filed

1-4 received on 16.12.2005 with letter of 12.12.2005

Drawings, Sheets

1/6-6/6 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

**WRITTEN OPINION OF THE INTERNATIONAL
PRELIMINARY EXAMINING AUTHORITY**

International application No.
PCT/EP2005/050484

Box No. V Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	2 - 18
	No: Claims	1
Inventive step (IS)	Yes: Claims	2 - 18
	No: Claims	1
Industrial applicability (IA)	Yes: Claims	1 - 18
	No: Claims	

2. Citations and explanations:

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

**WRITTEN OPINION OF THE INTERNATIONAL
PRELIMINARY EXAMINING AUTHORITY
(SEPARATE SHEET)**

International application No.

PCT/EP2005/050484

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. In this communication reference is made to document D1:
D1: US 2003/146794 A1 (YAMAGISHI AKIHIRO ET AL) 7 August 2003.
2. The amendments filed with the letter dated 12.12.2005 introduce subject-matter which extends beyond the content of the application as filed, contrary to Article 34(2)(b) PCT.
The amendments concerned in claim 1 are the following:
 - "digitally blocking" each tuned element;
 - blocking in "the flat maximum or minimum region" and
 - "decreasing" the gain of said elements.These features are not explicitly mentioned nor are they available from the application as originally filed.
3. Disregarding the added subject-matter mentioned above under point 1, the objection under Article 33(2) PCT of lack of novelty of claim 1 is maintained. It is noted that in D1 the loop filter 130 is isolated from the charge pump 120 during the open loop mode (see paragraph 39) and the gain of the VCO with respect to the charge pump is reduced or set near zero, see formulas (1) and (2), and therefore also noise sensitivity is reduced.
4. The objection under Article 33 (3) PCT is maintained accordingly.
5. It is noted that an independent claim clearly defining
 - the selection steps of the needed capacitance values to produce the linear operating curve 701 for the "linearised frequency versus voltage curve" and
 - the method features achieving the "zero-gain mode" of the VCOappears to be suited to overcome the objections under Article 33 PCT, with due consideration of the requirements of Article 34(2)(b) PCT.

Re Item VII

Certain defects in the international application

1. The claims are not in the correct two-part form in accordance with Rule 6.3(b) PCT.
2. The description is not in conformity with the claims as required by Rule 5.1(a)(iii) PCT, there being no reference to the prior art document D1.

Re Item VIII

Certain observations on the international application

1. The application does not meet the requirements of Article 6 PCT because claim 1 is not clear:
 - it is not clear, to which circuits or parts the words "comprising" (line 1) and "including" (line 3) refer to; the same applies to "which output signal" (line 3), where it is unclear, if the tuned elements or the VCO is meant;
 - the following terms/expressions merely define a result to be achieved without defining any of the method steps, which are necessary to arrive at that desired result:
 - in line 6, the expression: "using a linearised ... curve" leaves it unclear, how the linearisation is achieved;
 - the word "enabling" in line 7 renders it unclear, how the wide locking range of the loop is achieved;
 - the word "automatically" in line 9 renders it unclear, when and at what condition the said switching is performed;
 - in line 6, the comma after switched renders it unclear if the VCO operating mode is switched "into" a first tuning operation or "during" or "after" the first tuning operation;
 - in line 6 it appears that it is not the "VCO operating mode", which is switched, but the whole PLL is switched, because locking can only occur in closed loop operation;
 - in line 8, it is unclear, what "the appropriate" frequency is;
 - the (added) expression of "digitally blocking" "a tuned element" is unclear,